

SECTION 11160

LOADING DOCK EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Dock bumpers.
 - 2. Dock levelers.
 - 3. Truck restraints.
 - 4. Dock seals.
- B. Related Sections:
 - 1. Division 3 Section "Cast-in-Place Concrete" for concrete work for recessed dock and truck levelers.
 - 2. Division 5 Section "Metal Fabrications" for curb angles at edge of loading dock and around edge of recessed dock-leveler pit, and for platform edge channels.
 - 3. Division 16 Sections for electrical wiring and connections.

1.3 DEFINITIONS

- A. Operating Range: Maximum amount of travel above and below the dock level.
- B. Working Range: Recommended amount of travel above and below the dock level for which loading and unloading operations can take place.

1.4 SUBMITTALS

- A. Product Data: Include rated capacities, furnished specialties, accessories, details of construction relative to materials, dimensions of individual components, profiles, and finishes.
- B. Shop Drawings: Show details of fabrication and installation. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Provide templates for anchors and bolts anchored to permanent construction.
 - 2. Wiring Diagrams: Detail wiring for power, signal, and control systems and differentiate between manufacturer-installed and field-installed wiring.
- C. Samples for Initial Selection: Manufacturer's color charts consisting of sections of fabric showing the full range of colors, textures, and patterns available for each type of product indicated below:
 - 1. Dock seals.
- D. Samples for Verification: Of the following products, in manufacturer's standard sizes, showing the full range of fabric color, texture, and pattern variations expected. Prepare Samples from the same material to be used for the Work.
 - 1. Dock seals.
- E. Maintenance Data: For loading dock equipment to include in the maintenance manuals specified in General and Supplementary Conditions. Include name, address, and telephone number of manufacturer's nearest authorized service representative.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who is an authorized representative of loading dock equipment manufacturer for both installation and maintenance of the type of units required for this Project.
 - 1. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.
- B. Source Limitations: Obtain each loading dock equipment component, including dock bumpers, levelers, lifts, and seals, as a complete unit from one source and by a single manufacturer.
- C. Dock-Leveler Standard: Comply with MH 30.1, "Safety, Performance and Testing of Dock Leveling Devices."
- D. Preinstallation Conference: Conduct conference at Project site to comply with requirements of General and Supplementary Conditions' Section "Project Meetings."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle dock seals and shelters in a manner to avoid significant or permanent damage to fabric or frame.
 - 1. Comply with manufacturer's written instructions for minimum and maximum temperature requirements for storage.

1.7 COORDINATION

- A. Recessed Dock Levelers: Coordinate size and location of pits to ensure proper clearances and operation of equipment. Concrete, reinforcement, and formwork requirements are specified in Division 3 Section "Cast-in-Place Concrete."
- B. Coordinate delivery of built-in anchoring devices to Project site to avoid delaying progress.

1.8 WARRANTY

- A. Dock-Leveler Warranty: Submit a written warranty, executed by manufacturer, agreeing to repair or replace dock-leveler components that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:
 - 1. Structural failures, including cracked or broken structural support members and load-bearing welds.
 - 2. Deck plate failures, including cracked plate or permanent deformation in excess of 1/4 inch between deck supports.
 - 3. Faulty operation of operators, control system, or hardware.
- B. Warranty Period: Two years from date of Substantial Completion.
 - 1. Warranty shall be for unlimited usage of the leveler for the specified rated capacity over the term of the warranty.

1.9 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of dock equipment Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper equipment operation at rated speed and capacity. Provide parts and supplies as used in the manufacture and installation of original equipment.
 - 1. Perform maintenance, including emergency callback service, during normal working hours.
- B. Continuing Maintenance Service: Provide a continuing maintenance proposal from Installer to Owner, in the form of a standard yearly (or other period) maintenance agreement, starting on

date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Dock Bumpers:
 - a. Durable Corporation.
 - b. Kelley Dock Systems.
 - c. Rite-Hite Corporation.
 - d. Serco; A United Dominion Company.
 2. Recessed Dock Levelers:
 - a. Blue Giant USA Corporation.
 - b. Kelley Dock Systems.
 - c. Rite-Hite Corporation.
 - d. Serco; A United Dominion Company.
 - e. W.B. McGuire Co., Inc.; Division of Overhead Door Corporation.
 3. Truck Restraints:
 - a. Blue Giant USA Corporation.
 - b. Kelley Dock Systems.
 - c. Rite-Hite Corporation.
 - d. Serco; A United Dominion Company.
 - e. W.B. McGuire Co., Inc.; Division of Overhead Door Corporation.
 4. Dock Seals and Shelters:
 - a. Kelley Dock Systems.
 - b. Rite-Hite Corporation.
 - c. Serco; A United Dominion Company.
 - d. W.B. McGuire Co., Inc.; Division of Overhead Door Corporation.

2.2 DOCK BUMPERS

- A. Laminated-Tread Bumpers: Provide units of size indicated, fabricated from multiple plies cut from fabric-reinforced rubber tires to a uniform thickness of 4-1/2 inches . Laminate plies under pressure on 3/4-inch- diameter, steel supporting rods that are welded and bolted to 1/4-inch-thick, structural-steel angle closures with predrilled anchor holes. Size angles to provide not less than 1 inch of tread plies extending beyond the face of closure angles.
- B. Anchorage Devices: Provide anchor bolts, nuts, washers, bolts, sleeves, cast-in-place plate, and other anchorage devices as required to fasten bumpers securely in place and to suit installation type indicated. Hot-dip galvanize anchorage components.

2.3 RECESSED DOCK LEVELERS

- A. General: Provide recessed dock levelers of type, function, operation, capacity, size, and construction indicated, complete with controls, safety devices, and accessories required.
- B. Type: Provide recessed, hinged-lip-type dock levelers designed for permanent installation in concrete pits, preformed in the edge of loading platform.
- C. Function: Dock levelers shall compensate for differences in height between truck bed and loading platform in the following manner:
1. Vertical Travel: Minimum working range shall be 12 inches above and 12 inches below adjoining platform level. Provide an operating range above platform level of sufficient height to enable lip to extend and clear truck bed before contact.

2. Automatic Vertical Compensation: Floating travel of ramp with lip extended and resting on truck bed shall compensate automatically for upward or downward movement of truck bed during loading and unloading.
 3. Automatic Lateral Compensation: Tilting of ramp with lip extended and resting on truck bed shall compensate automatically for canted truck beds of up to 4 inches over width of ramp.
 4. Lip Operation: Provide manufacturer's standard mechanism that automatically extends and supports hinged lip on ramp edge with lip resting on truck bed over dock leveler's working range, allows lip to yield under impact of incoming truck, and automatically retracts lip when truck departs.
 - a. Length of Lip Extension: Not less than 16 inches from ramp edge and not less than 12 inches in front of dock bumpers.
 - b. Length of Lip Extension: Not less than 20 inches from ramp edge and not less than 16 inches in front of dock bumpers.
- D. Operation: Provide manufacturer's standard operating system as follows:
1. Mechanical Operating System: Provide spring-operated raising and walk-down lowering of unloaded ramp. Equip units with an upward-biased-spring counterbalancing mechanism controlled by a hold-down device. Raise ramp to top limit of operating range by operating recessed control handle in ramp to disengage hold-down device. Lower ramp below platform level with lip retracted by operating auxiliary, recessed, control handle to release support legs.
- E. Rated Capacity: Provide dock levelers capable of supporting a total gross load indicated below without permanent deflection or distortion, as determined by actual tests complying with requirements of MH 30.1 for rated capacity.
1. Total Load: Not less than 20,000 lb.
- F. Safety Devices: Provide manufacturer's standard and optional safety devices as follows:
1. Toe Guards: Equip open sides of rising ramp over entire upper operating range with metal toe guards mounted flush with ramp edges and projecting below ramp.
 2. Cross-Traffic Support: Provide manufacturer's standard method of supporting ramp at platform level in stored position with lip retracted. Provide a means to release supports to allow ramp to descend below platform level.
 3. Free-Fall Protection: Equip mechanical dock levelers with manufacturer's standard protection system to limit free fall of loaded ramps with front edge supported by truck bed.
 4. Maintenance Strut: Provide an integral strut to positively support ramp in up position during maintenance of dock leveler.
 5. Interlocks: Provide control interlocks between dock leveler and other dock equipment as follows:
 - a. Leveler to Truck-Restraint Interlock: Leveler will not operate while truck restraint is not engaged.
- G. Construction: Fabricate dock-leveler frame from structural- and formed-steel shapes. Fabricate platform, including hinged lip, from nonskid steel plate. Fabricate entire assembly to withstand deformation during both operating and stored phases of service. Chamfer lip edge to minimize obstructing wheels of material-handling vehicles. Include two dock bumpers attached to frame.
1. Clean Pit Frame: Provide leveler framing designed to support leveler at sides of pit, with no side-to-side supports at front and back of pit floor.
- H. Finish and Color: Manufacturer's standard paint applied to factory-assembled and -tested dock levelers before shipping. Paint toe guards yellow to comply with ANSI Z535.1, and paint remainder of surfaces in manufacturer's standard color.
- I. Accessories: Equip units with manufacturer's standard accessories as follows:
1. Night Locks: Provide manufacturer's standard means to prevent extending lip and lowering ramp when overhead doors are locked.
 2. Side and rear weatherseals.

3. Foam insulation under dock-leveler platform.

2.4 TRUCK RESTRAINTS

- A. General: Provide manufacturer's standard mechanical device designed to engage truck's rear-impact guard and hold truck at loading dock. Restraint shall consist of an iron or steel restraining arm that raises until contacting rear-impact guard. Arm shall move vertically, automatically adjusting to varying height of truck due to loading and unloading operations.
- B. Automatic Operating System: Provide manufacturer's standard electrically or hydraulically powered restraint, activated by a remote-control station.
 1. Electrical Requirements: Coordinate wiring requirements and current characteristics with building electrical system. See Division 16 Sections.
 2. Remote-Control Station: Provide a single-button station of the constant-pressure type, enclosed in a NEMA ICS 6, Type 12 box. Engage restraint by holding the button depressed, and release restraint by releasing button.
 3. Rear-Impact-Guard Sensor: Provide sensor that detects presence of rear-impact guard.
- C. Operating Range: Restrain rear-impact guard within a range from 11 to 30 inches vertically above driveway, and from 0 to 12 inches horizontally in front of dock bumpers.
- D. Mounting: Provide manufacturer's standard mounting method as follows:
 1. Wall Mounted: Unit with mounting plate, designed for attachment to dock face by welding or bolting.
- E. Restraining Capacity: Not less than 30,000 lb .
- F. Communication System: Provide manufacturer's standard system, as follows:
 1. Warning Signs: Set of surface-mounted signs.
 2. Signal Lights: Set of illuminated exterior and interior signal lights to indicate device's status to both controller and truck driver.
 - a. Lights shall be activated automatically when device engages rear-impact guard.
- G. Interlocks: Interconnect truck restraint with dock leveler to permit simultaneous activation of leveler and truck restraint.
- H. Finish and Color: Manufacturer's standard paint applied to factory-assembled and -tested truck restraints before shipping. Paint surfaces in manufacturer's standard color.

2.5 DOCK SEALS

- A. General: Provide manufacturer's standard dock seals consisting of fabric-covered foam pads designed to compress under pressure of truck body to form an airtight seal at jambs and head of loading dock openings.
- B. Size of Jamb Pads: Provide jamb pads not less than 12 inches wide and 12 inches deep, sized to suit opening height.
- C. Size and Type of Head Pad: Provide head pad of same depth as jamb pads, sized to suit opening width, and as follows:
 1. Type: Provide stationary head pads.
 - a. Height: Not less than 18 inches.
- D. Construction: Provide manufacturer's standard construction consisting of single- or double-ply, coated, fabric-covered, urethane-foam core with supporting frame.
 1. Cover Fabric: Vinyl-coated nylon or polyester cover fabric with minimum total weight of 40 oz./sq. yd.
 2. Fabric Color: Provide colors as selected by Architect from manufacturer's standard colors.
 3. Guide Strips: 4-inch- wide, coated, nylon guide strips on jamb pads.
 4. Pleated Protectors: Provide protectors on face of jamb pads of overlapping layers of coated fabric attached to base fabric.

- a. Wear Exposure: 8 inches.
- 5. Wood Support Frame: Select structural-grade dimension lumber according to DOC PS 20, pressure-treated with waterborne preservatives to comply with AWPA C2, kiln dried and factory painted, with steel mounting hardware.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of loading dock equipment.
- B. Examine roughing-in for electrical systems for dock equipment to verify actual locations of connections before installation.
- C. Examine walls and floors of pits for suitable conditions where recessed dock equipment is to be installed. Pits shall be plumb and square, and properly sloped for drainage from back to front of dock.
- D. Proceed with installation of loading dock equipment only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Coordinate installation of loading dock equipment indicated to be attached to or recessed into concrete or masonry, and furnish anchoring devices with templates, diagrams, and instructions for their installation.
- B. Clean recessed pits of debris.

3.3 INSTALLATION, GENERAL

- A. General: Comply with manufacturer's detailed written instructions for installing loading dock equipment.
 - 1. Install equipment, motor, pump, control stations and wiring, safety devices, and accessories as required for a complete installation.
- B. Electrical Connections: Rough-in electrical connections according to requirements in Division 16.

3.4 DOCK-BUMPER INSTALLATION

- A. Attach dock bumpers to structure in a manner that complies with requirements indicated for spacing, arrangement, and position relative to top of platform and anchorage.
 - 1. Bolted Attachment: Attach dock bumpers to preset anchor bolts embedded in concrete or to cast-in-place inserts or threaded studs welded to embedded steel plates or angles. If preset anchor bolts, cast-in-place inserts, or threaded studs welded to embedded plates or angles are not provided, attach dock bumpers by drilling and anchoring with expansion anchors and bolts.

3.5 DOCK-LEVELER INSTALLATION

- A. Attach leveler securely to loading platform construction according to manufacturer's written instructions, flush with adjacent dock surfaces and square to recessed pit.
- B. Recessed Dock Levelers: Coordinate forming recessed pit for dock levelers to ensure that recess is adequate to accommodate leveler in proper relation to loading platform.

3.6 TRUCK-RESTRAINT INSTALLATION

- A. Attach truck restraints in a manner that complies with requirements for arrangement and height required for device to engage vehicle rear-impact guard.
 - 1. Weld restraint to steel mounting plate embedded in dock face.
- B. Interconnect control panel and signals according to manufacturer's written installation instructions.

3.7 DOCK-SEAL INSTALLATION

- A. Attach supporting frames securely to building structure in proper relation to openings, dock bumpers, and dock levelers to ensure compression of dock seals when trucks are positioned against dock bumpers.

3.8 ADJUSTING

- A. Adjust loading dock equipment for safe, efficient operation.
- B. Test dock levelers and lifts for vertical travel within operating range indicated.

3.9 CLEANING AND PROTECTING

- A. Restore marred, abraded surfaces to their original condition.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure loading dock equipment is without damage or deterioration at the time of Substantial Completion.

3.10 DEMONSTRATION

- A. Startup Services: Engage a factory-authorized service representative to perform startup services and to train Owner's maintenance personnel as specified below:
 - 1. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - 2. Train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.
 - 3. Schedule training through CM with at least seven days' advance notice.

END OF SECTION 11160